

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
3 July 2003 (03.07.2003)

PCT

(10) International Publication Number
WO 03/053187 A1

(51) International Patent Classification: **A45D 19/02**

(21) International Application Number: PCT/IB02/05617

(22) International Filing Date:
18 December 2002 (18.12.2002)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
PCT/SG01/00265
21 December 2001 (21.12.2001) SG

(71) Applicant (for all designated States except US): **KONINKLIJKE PHILIPS ELECTRONICS N.V.** [NL/NL];
Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **RIJSKAMP, Peter** [NL/NL]; Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).

(74) Agent: **SCHOUTEN, Marcus, M.**; Internationaal Octrooibureau B.V., Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

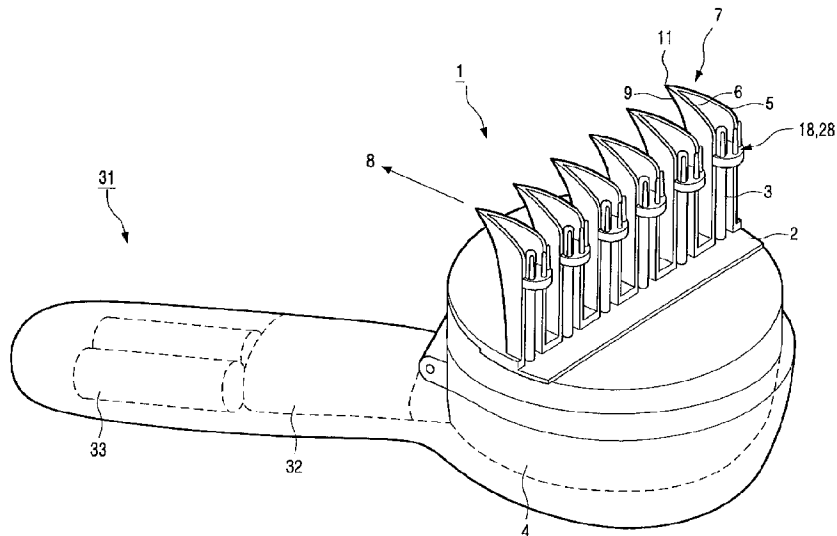
(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: DEVICE FOR APPLYING AN ADDITIVE TO HAIR ROOTS



(57) Abstract: The invention relates to a device (1) for applying an additive to hair, comprising a base part (2), an applicator element (3) which is connected to an additive reservoir (4) and has at least one outlet opening (5) for applying additive to the hair during operation, a hair parting element (6) for parting the hair during operation, having an end surface (7) near said outlet opening (5), and an operating direction (8) in which the device (1) is moved during operation. At least a portion (9) of the hair parting element (6) adjoining the end surface (7) has a substantially wedge-shaped cross-section (10) with a tip (11) extending practically in the operating direction (8), the outlet opening (5) being provided behind the tip (11), as viewed in the operating direction (8). The device according to the invention enables effective application of additive to the roots of the hair in a user-friendly manner.

WO 03/053187 A1

Device for applying an additive to hair roots

The invention relates to a device for applying an additive to hair, comprising a base part, an applicator element which is connected to an additive reservoir and has at least one outlet opening for applying additive to the hair during operation, a hair parting element for parting the hair during operation, having an end surface near said outlet opening, and an
5 operating direction in which the device is moved during operation.

The invention also relates to an electrical apparatus for the colouring of hair, comprising electrical pumping means, power supply means, and a device for applying a colouring additive to hair, which device comprises a base part, an applicator element which is connected to an additive reservoir and has at least one outlet opening for applying additive to
10 the hair during operation, a hair parting element for parting the hair during operation, having an end surface near said outlet opening, and an operating direction in which the device is moved during operation.

15 A device of the type defined in the opening paragraph is known from US 4,211,247. This known device is a device for applying a hair colouring additive to hair. In this known device the applicator element and the hair parting element are comprised in one elongate pin which comprises an outlet opening and has a spherical end surface. Said pin comprises a transport channel in connection with an additive reservoir for transporting
20 additive from the additive reservoir to the outlet opening, which channel extends in the longitudinal direction of the pin. During operation, the device is moved by the user in the operating direction to part the hair and to apply the additive from the additive reservoir to the hair via the outlet opening, both by means of said pin.

A drawback of the known device is that it is cumbersome for a user to apply
25 the additive effectively to the roots of the hair by means of the device. Especially in hair colouring it is important that the hair colouring additive is effectively applied also to the roots, to obtain a satisfactory overall colouring result. The user has to move the known device in circular massaging movements across the scalp to make sure that the additive effectively reaches the roots of the hair. This way of handling the device is not comfortable for the user

operating the device on her or his own head and may, furthermore, cause the hair to become entangled.

5 It is an object of the invention to provide a device for applying an additive to hair which enables effective application of additive to the roots of the hair in a user-friendly manner. To achieve this object, a device for applying an additive to hair according to the invention is characterized in that at least a portion of the hair parting element adjoining the end surface has a substantially wedge-shaped cross-section with a tip extending practically in
10 the operating direction, the outlet opening being provided behind the tip, as viewed in the operating direction. When the device is moved in the operating direction, said portion of the hair parting element adjoining the end surface parts the hairs at a location close to the scalp. In this manner the roots of the hairs are effectively exposed by the hair parting element, and the additive coming out of the outlet opening provided behind the tip can be applied directly
15 to the exposed hair roots. Effective application of additive to the roots is thus achieved, while the user can use the device in a comfortable manner without having to perform cumbersome movements with the device.

 An embodiment of a device for applying an additive according to the invention is characterized in that said portion of the hair parting element adjoining the end
20 surface extends at least as far as the outlet opening, as viewed in the operating direction. Since said portion extends as far as the location of the outlet opening, it is ensured that the additive coming out of the outlet opening is applied directly to those hair roots which are exposed by the hair parting element.

 An embodiment of a device for applying an additive according to the
25 invention is characterized in that the portion of the hair parting element adjoining the end surface has walls enclosing a hollow space between the tip and the outlet opening. When the hairs are parted by the hair parting element and the roots are exposed, this hollow space serves as a guide for the additive coming out of the outlet opening, thus ensuring proper application of the additive to the roots.

30 An embodiment of a device for applying an additive according to the invention is characterized in that a distribution member is provided behind the portion of the hair parting element adjoining the end surface, as viewed in the operating direction. After the additive has been applied via the outlet opening, this distribution member distributes the additive further over the hair.

It is advantageous when the distribution member comprises a plurality of pins. These pins comb the hairs after application of the additive thus distributing the additive effectively through the hair.

5 An embodiment of a device for applying an additive according to the invention is characterized in that that a plurality of applicator elements and a plurality of hair parting elements are provided in a pre-determined arrangement on the base part. In this manner the additive can be applied effectively and quickly to large areas of the head of a user at once. The arrangement of the applicator elements and the hair parting elements may be chosen to fit a specific type of device which may be, for example, dependent on the type of
10 additive to be applied with the device or on the type of hair.

An embodiment of a device for applying an additive according to the invention is characterized in that the end surface comprises a curved surface. In this manner any contact occurring between the end surface and the scalp of the user during use of the device causes as little discomfort as possible for the user.

15 According to the invention, an electrical apparatus for the colouring of hair as mentioned in the opening paragraph is characterized in that the device for applying a colouring additive to hair is a device according to the invention. The advantages of an electrical apparatus for the colouring of hair, such as a uniform discharge of additive by means of an electrically driven electrical pumping means for transporting additive from the
20 reservoir to the outlet opening, are enhanced by the advantage of effective and easy application of additive to the roots, as offered by the device according to the application. The electrical apparatus for the colouring of hair according to the invention thus offers effective colouring of hair in a user-friendly manner.

25

The invention will be described in more detail hereinafter with reference to the drawings, in which

Fig. 1 shows a perspective view of an electrical apparatus for the colouring of hair according to the invention, comprising an embodiment of a device for applying an
30 additive to hair according to the invention,

Fig. 2a shows a schematic view of a detail of the device shown in Figure 1 for applying an additive to hair during operation, and

Fig. 2b shows a perspective view of a detail of the device shown in Figure 1 for applying an additive to hair during operation.

Figure 1 shows an electrical apparatus for the colouring of hair 31 according to the invention, comprising electrical pumping means 32, power supply means 33, and an embodiment of a device 1 for applying an additive to hair according to the invention. The device 1 comprises a base part 2 and a plurality of applicator elements 3 which are connected to an additive reservoir 4. Each applicator element 3 has an outlet opening 5 for applying additive to the hair during operation. The electrical pumping means 32 in this embodiment comprise an electrically driven piston which urges the additive from the additive reservoir 4 to the outlet openings 5. Such electrical pumping means are known per se and, therefore, are not further elucidated here nor shown in detail in the Figure. It is to be noted that other types of known electrical pumping means may be applied in the electrical apparatus for the colouring of hair 31 according to the invention. The power supply means 33 in this embodiment comprise batteries, but may also comprise other known types of power supply means.

The device 1 also comprises a plurality of hair parting elements 6 for parting the hair during operation, each having an end surface 7 near the outlet opening 5. As can be seen in Figure 1 and in more detail in Figure 2a, a portion 9 of the hair parting element 6 adjoining the end surface 7 has a substantially wedge-shaped cross-section 10 with a tip 11 extending practically in the operating direction 8. The outlet opening 5 is provided behind the tip 11, as viewed in the operating direction 8. During operation, the device 1 is moved over the head in the operating direction 8. As can be seen in Figures 2a and 2b, the hairs 50 are effectively parted near the scalp of the user by the wedge-shaped portion 9, and the roots 51 of the hairs 50 are thus effectively exposed. The additive which is discharged from the outlet opening 5 (denoted by arrows in Figures 2a and 2b) directly reaches the roots 51 of the hairs 50. In this manner the additive is applied effectively and quickly to the roots of the hair. The device can be handled in a comfortable manner by the user, even when using it on her or his own head, since no additional cumbersome movements are needed to apply the additive effectively to the roots of the hair.

It is to be noted that the hair parting element 6 may comprise various shapes of cross-section, as long as at least the portion 9 adjoining the end surface 7 has a substantially wedge-shaped cross-section 10 with a tip 11 extending practically in the operating direction 8. The remainder of the hair parting element 6 may also comprise a wedge-shaped cross-

section but may also comprise a cross-section of a different shape, such as a circular cross-section.

Furthermore, the portion of the hair parting element adjoining the end surface 7 extends at least as far as the outlet opening 5, as viewed in the operating direction 8. In this embodiment said portion extends even further than the outlet opening 5, as can be seen in Figure 2a. In this manner it is ensured that, when during movement of the device 1 over the head a certain portion of the hair is parted near the scalp by the wedge-shaped cross-section 10, said portion of the hair is maintained parted at least until said portion is reached by the outlet opening 5. This further enhances the effective application of additive to the roots 51 of the hair.

In this embodiment the portion 9 of the hair parting element 6 adjoining the end surface 7 also has walls 12 enclosing a hollow space 13 between the tip 11 and the outlet opening 5. When the hairs 50 are parted and the roots 51 are exposed by the hair parting element 6, the additive is discharged from the outlet opening 5. The walls 12 enclosing the hollow space 13 guide the additive discharged from the outlet opening to the exposed roots present beneath the hollow space 13, and ensure that the additive is kept as much as possible within the hollow space 13 during operation. This further enhances the effective application of additive to the exposed hair roots.

Figures 1 and 2a show that a distribution member 18, comprising three pins 28 in this embodiment, is provided behind the portion 9 of each hair parting element 6 adjoining the end surface 7, as viewed in the operating direction 8. When the additive has been applied to the exposed hair roots via the outlet opening 5, these pins 28 provide further combing of the hairs to further spread the additive among the hairs.

It is advantageous when a plurality of applicator elements 3 and a plurality of hair parting elements 6 are provided in a pre-determined arrangement on the base part 2. The arrangement of the applicator elements and the hair parting elements on the base part may be chosen in designing the device so as to fit a specific type of device. The arrangement of the applicator elements and the hair parting elements on the base part may for example, be chosen in dependence on the type of additive to be applied by means of the device. In this embodiment the elements are arranged in line, so that the additive is applied and distributed over a relatively large distance. However, other arrangements such as, for example, a circular arrangement are, of course, also possible.

As can be seen in Figure 1 and Figure 2b, the end surface 7 comprises a curved surface. In this manner said end surface contacts the scalp of the user during operation in a manner which is more comfortable for the user.

It is to be noted that the use of the device according to the invention is not
5 limited to use in an apparatus for applying an additive to hair which is electrically driven. It may also be advantageously used in an apparatus for applying an additive to hair which comprises manually driven pumping means such as, for example, a manually driven piston construction or a squeezable bottle.

It is observed that the device for applying an additive to hair according to the
10 invention is especially suitable for the effective application of a colouring additive. However, said device is also suitable for effective application of other additives such as, for example, hair lotion, hair tonic or hair conditioner. It is also very suitable for the application of additives having a firming effect on the hairs; generally speaking such additives should also be applied as effectively as possible to the roots of the hair so as to achieve a good styling
15 result.

It is furthermore observed that the additive reservoir may be refillable with additive when it has become empty after use, or may be detachably mounted in the device to be replaceable by a new reservoir.

CLAIMS:

1. A device (1) for applying an additive to hair, comprising:
 - a base part (2);
 - an applicator element (3) which is connected to an additive reservoir (4) and has at least one outlet opening (5) for applying additive to the hair during operation;
 - 5 - a hair parting element (6) for parting the hair during operation, having an end surface (7) near said outlet opening (5); and
 - an operating direction (8) in which the device (1) is moved during operation; characterized in that at least a portion (9) of the hair parting element (6) adjoining the end surface (7) has a substantially wedge-shaped cross-section (10) with a tip (11) extending
 - 10 practically in the operating direction (8), the outlet opening (5) being provided behind the tip (11), as viewed in the operating direction (8).
2. A device as claimed in Claim 1, characterized in that said portion (9) of the hair parting element (6) adjoining the end surface (7) extends at least as far as the outlet
- 15 opening (5), as viewed in the operating direction (8).
3. A device as claimed in Claim 1, characterized in that the portion (9) of the hair parting element (6) adjoining the end surface (7) has walls (12) enclosing a hollow space (13) between the tip (11) and the outlet opening (5).
- 20 4. A device as claimed in Claim 1, characterized in that a distribution member (18) is provided behind the portion (9) of the hair parting element (6) adjoining the end surface (7), as viewed in the operating direction (8).
- 25 5. A device as claimed in Claim 4, characterized in that said distribution member (18) comprises a plurality of pins (28).

6. A device as claimed in Claim 1, characterized in that a plurality of applicator elements (3) and a plurality of hair parting elements (6) are provided in a pre-determined arrangement on the base part (2).
- 5 7. A device as claimed in Claim 1, characterized in that the end surface (7) comprises a curved surface.
8. An electrical apparatus for the colouring of hair (31), comprising electrical pumping means (32), power supply means (33), and a device (1) for applying a colouring additive to hair, which device comprises a base part (2), an applicator element (3) which is
10 connected to an additive reservoir (4) and has at least one outlet opening (5) for applying additive to the hair during operation, a hair parting element (6) for parting the hair during operation, having a end surface (7) near said outlet opening (5), and an operating direction (8) in which the device (1) is moved during operation, characterized in that said device (1)
15 for applying a colouring additive to hair is a device as claimed in any of the preceding Claims.

1/2

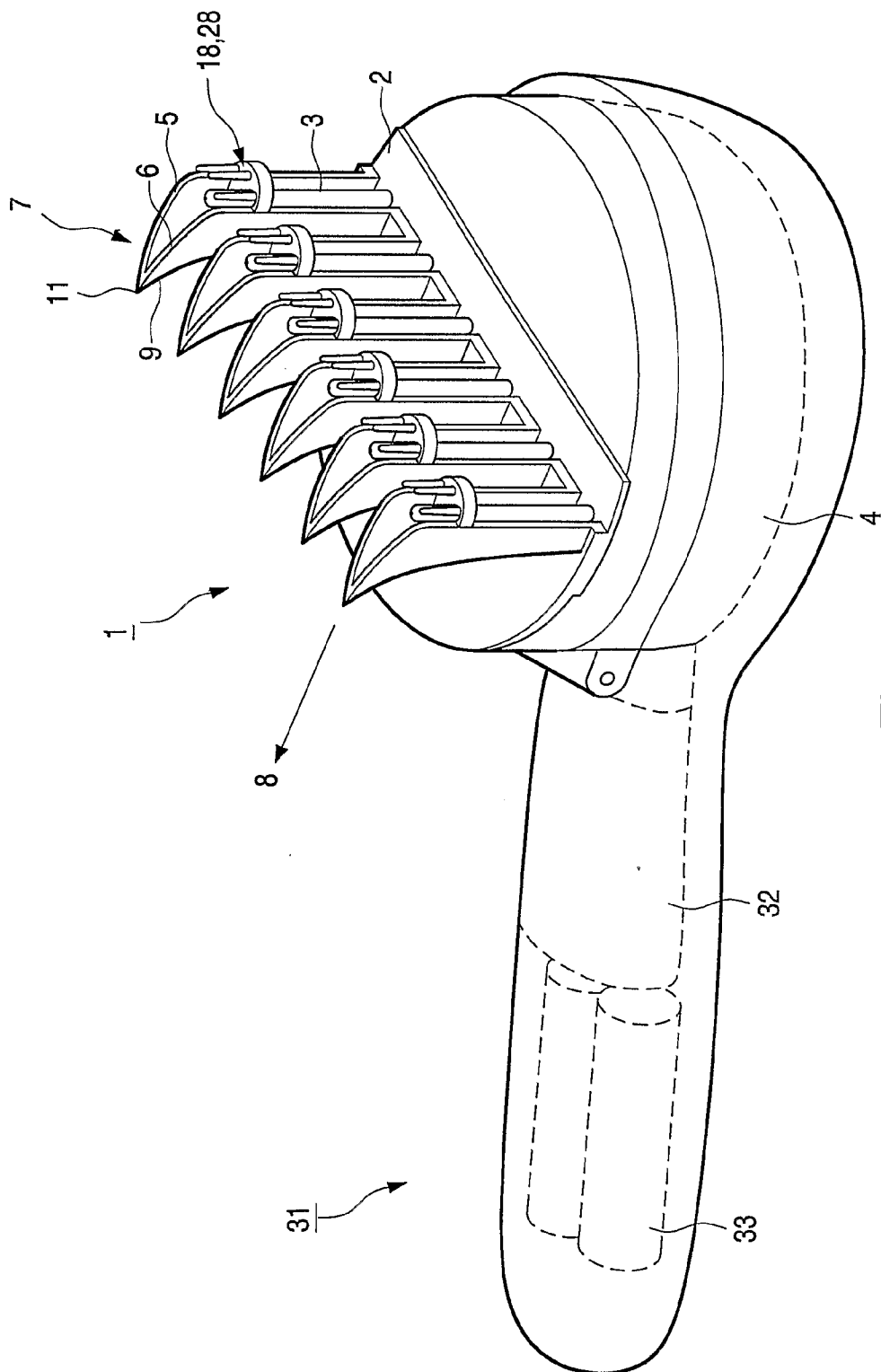


Fig.1

2/2

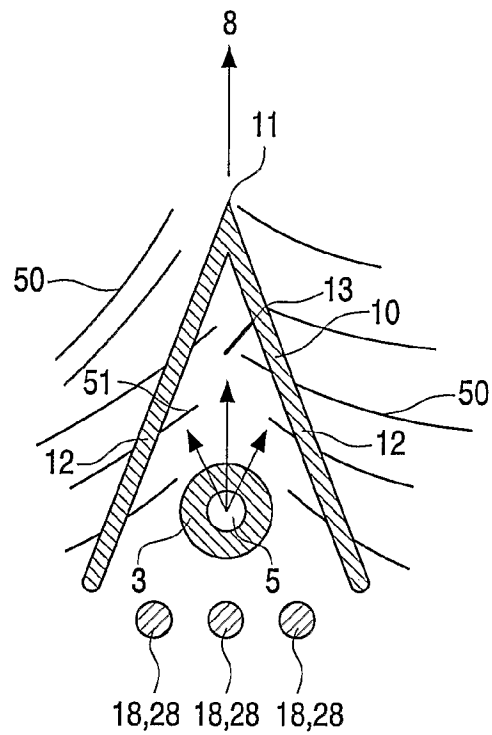


Fig.2a

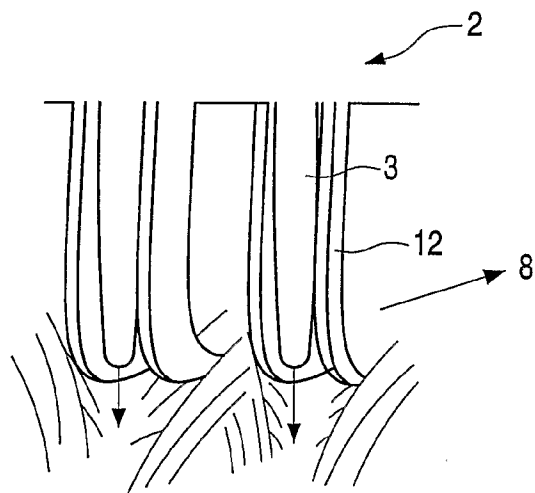


Fig.2b

INTERNATIONAL SEARCH REPORT

PCT/TB 02/05617

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A45D19/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A45D A46B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 009 881 A (BAUDIN) 4 January 2000 (2000-01-04)	1-7
Y	column 5 -column 6; figure 3B	8
Y	WO 98 51183 A (SCHNEIDER) 19 November 1998 (1998-11-19) abstract; figure 2	8
A	DE 199 22 092 A (HENKEL KGAA) 30 November 2000 (2000-11-30) column 2, line 49 - line 54; figures 2,3	5,6
A	US 5 947 130 A (MUSUM VENY W) 7 September 1999 (1999-09-07) abstract; figures	1

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

A document defining the general state of the art which is not considered to be of particular relevance

E earlier document but published on or after the international filing date

L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

O document referring to an oral disclosure, use, exhibition or other means

P document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

G document member of the same patent family

Date of the actual completion of the international search

7 March 2003

Date of mailing of the international search report

09/04/2003

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

van Overbeek, K

INTERNATIONAL SEARCH REPORT

patent family members

PCT/IB 02/05617

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 6009881	A	04-01-2000	FR 2770104 A1	30-04-1999
			EP 0910967 A1	28-04-1999
			JP 2974671 B2	10-11-1999
			JP 11196926 A	27-07-1999
WO 9851183	A	19-11-1998	IL 120821 A	16-07-2000
			AU 732537 B2	26-04-2001
			AU 7076398 A	08-12-1998
			WO 9851183 A1	19-11-1998
DE 19922092	A	30-11-2000	DE 19922092 A1	30-11-2000
			AU 753659 B2	24-10-2002
			AU 4755900 A	05-12-2000
			BR 0010623 A	19-02-2002
			CN 1351475 T	29-05-2002
			CZ 20014148 A3	13-02-2002
			WO 0069308 A1	23-11-2000
			EP 1179986 A1	20-02-2002
			HU 0201208 A2	28-08-2002
			JP 2002543904 T	24-12-2002
			SK 17462001 A3	04-04-2002
US 5947130	A	07-09-1999	US 6079420 A	27-06-2000